Patent Search

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Abstract:

Abstract Employing batch equilibrium studies, sodium bentonite clay had its de-fluoridation capability in an aqueous medium examined. The purpose of this research determine whether or not organic sodium bentonite clay could be used to remove fluoride with an aqueous medium. Organic sodium bentonite clay's chemistry, stru texture are precisely characterized owing to meticulous physicochemical and geochemical analysis. Through the use of a potentiometric technique as well as a digital coupled to a fluoride-specific ion electrode, the concentration of fluoride anions and cations can be calculated. Period of contact, starting fluoride percentage, catalys and beginning pH solution are just some of the process variables studied and improved via batch adsorption studies performed at ambient temperature. Outcomes f trials indicated that 30 minutes of preparation time proved adequate to achieve homeostasis between both the presence of electrolytes and with concentration of flu mg L-1 and a concentration of catalyst of 2 g L-1, the highest amount of fluoride taken out of an aqueous solution was 51.1% when the conditions were acidic. The ex evidence for order kinetics fits well into the framework of the Freundlich model. This suggests that there is monolayer adsorption with a non-uniform distribution of e over the surface.

Complete Specification

Description:Evaluation and Methodology of A Sustainable Adsorbent for Fluoride Removal from an Aqueous Medium

Field and Background of the Invention

Toxic substances, such as fluorine, could indeed enter groundwater during infiltration as well as percolation after being discharged onto surface water as just a by-p of a variety of industrial processes. Owing to its prolonged biological malignant activity, the accumulation of ionic fluoride in drinking water has indeed been viewed vital environmental hazard on a global scale. Fluoride enters the groundwater storage by the spontaneous leaching of rocks that have been contaminated with harr chemicals and then fortified with fluoride. Drainage from such factories has been shown to have fluoride concentrations that are tens to hundreds of times higher t those found in natural waters, suggesting a major health risk to humans. Groundwater contamination could result from the release of F-containing industrial efflue the fresh water. One of the most significant sources of freshwater resources is groundwater. Thus, it appears that consuming these substances is the primary route exposure for humans. Too much fluoride in the water supply has been linked to diseases of the teeth and bones such as osteoarthritis, rheumatism, and even malig The majority of physicochemical strategies are based on coagulation and flocculation, membrane filtration procedures, electrochemical techniques, and adsorption methodologies. It has recently been demonstrated that adsorption is a reliable and efficient approach for cleaning up industrial effluent. A variety of de-fluoridation adsorbent materials described in the literature, including activated carbon derivative from a number of biomasses, activated carbons, and an aluminium-based bio sorbent. However, more study is needed to uncover substitute adsorbents, including such clay as well as clay minerals, which are abundantly available and ecologic responsible. Natural clays such as magnetite, serpentine materials, kaolinite, and palygorskite-based sepiolite were utilized to remove fluoride from drainage. The

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TITLE OF INVENTION	Evaluation and Methodology of A Sustainable Adsorbent for Fluoride Removal from an Aqueous Medium
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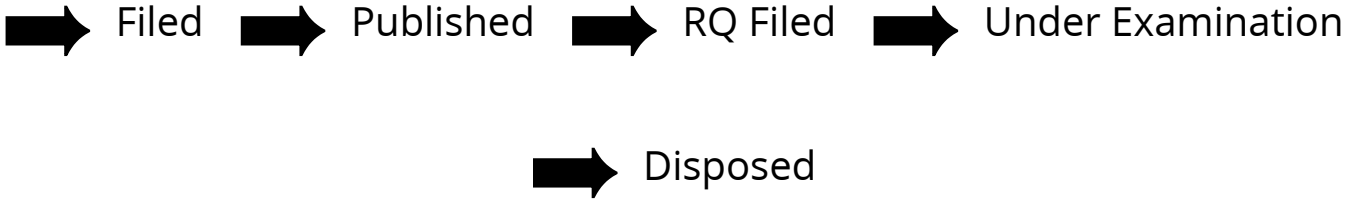

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